

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-39 (canceled)

40. (Amended) The printhead of Claim 45, wherein the nozzles comprising the array are arranged in subgroups of nozzles, each subgroup comprising at least two nozzles, each subgroup fed with liquid ink through a corresponding ink flow path isolated from other nozzles of the array by the barrier layer/orifice structure, wherein the ink flow path for each nozzle subgroup includes an opening or set of openings through the thin film layer and through the substrate, and wherein each nozzle of a nozzle subgroup supplied with ink via said opening or set of openings.

41. (Amended) The printhead of Claim 45, wherein the nozzles comprising the array are arranged in subgroups of nozzles, each subgroup comprising at least two nozzles, each subgroup fed with liquid ink through a corresponding ink flow path isolated from other nozzles of the array by the barrier layer/orifice structure, further comprising printhead electronics that provide firing pulses to the drop generators such that no two nozzles of each nozzle subgroup are fired sequentially.

42. (Original) The printhead of Claim 41, wherein the printhead electronics provides said firing pulses such that no two nozzles in a nozzle subgroup are activated simultaneously.

43. (Previously presented) The printhead of Claim 45 wherein the barrier/orifice structure includes a polymer layer.

44. (Previously presented) The printhead of Claim 45 wherein the nozzles of each nozzle column have a pitch of 600 nozzles per inch (npi).

45. (Amended) An ink jet printhead comprising:

a substrate;

an ink feed slot formed through the substrate;

a thin film layer disposed on a surface of the substrate, the thin film layer defining a plurality of firing resistors, a plurality of ink feed openings formed through the thin film layer to provide respective ink paths through the thin film layer from the ink feed slot;

a barrier/orifice structure disposed on the thin film layer, the structure defining an array of nozzles arranged in a plurality of nozzle columns and an array of firing chambers in correspondence with the array of nozzles;

the firing resistors being arranged in correspondence with the firing chambers;

the barrier/orifice structure further comprising a continuous rib portion extending between adjacent first and second ones of the plurality of nozzle columns to fluidically separate the first and second ones of the nozzle columns; and

wherein said plurality of ink feed openings are arranged in a first group on a first side of said rib portion for feeding nozzles of the first one of said plurality of columns, and a second group on a second side of said rib portion for feeding nozzles of the second one of said plurality of columns.

46. (New) A fluid ejecting printhead, comprising:

a substrate having a surface, and a fluid supply slot formed through the substrate to the surface;

a columnar group of drop generators formed on the surface that are arranged into subgroups each comprising at least two drop generators, each of said subgroups supplied with fluid through the fluid supply slot, each subgroup being fluidically isolated from other subgroups on the surface; and

printhead electronics that provide firing pulses to the drop generators such that no two drop generators in the same subgroup are activated in sequence.

47. (New) The printhead of Claim 46, wherein the printhead electronics activates the drop generators in said columnar group of drop generators one at a time.

48. (New) The printhead of Claim 47, wherein the columnar group of drop generators is a primitive, and the substrate comprises a plurality of primitives arranged in a column.

49. (New) The printhead of Claim 46, wherein each subgroup includes a chamber and at least two firing resistors.

50. (New) The printhead of Claim 46, wherein the substrate has a plurality of fluid feed holes formed therein to provide fluid to each of the subgroups of drop generators.

51. (New) The printhead of Claim 46, wherein the substrate includes a thin film layer that overlays the fluid feed slot, the thin film layer having openings that couple each of the subgroups to the fluid feed slot.

52. (New) The printhead of Claim 46, further including a fluid supply fluidically coupled to the fluid feed slot to supply the feed slot with fluid.

53. (New) The printhead of Claim 52, wherein the fluid supply is a supply of liquid ink.

54. (New) The printhead of Claim 51, wherein the thin film layer comprises a plurality of thin films, the thin film layer forming heater resistors in each of the drop generators.

55. (New) The printhead of Claim 46, wherein the subgroups include a pair of drop generators.

56. (New) A system for delivering fluid, comprising:

a printhead substrate having a surface on which is formed a columnar group of drop generators that are arranged into subgroups, each of the subgroups including more than one drop generator, one or more fluid feed slots formed through the substrate to provide fluid to the drop generators in the columnar group, the subgroups being fluidically isolated from each other on the surface;

a printhead control electronics electrically coupled to the printhead, the printhead control electronics providing firing signals to the printhead such that no two drop generators in the same subgroup are activated in sequence.

57. (New) The system of Claim 56, further comprising an apparatus for imparting relative motion between the printhead substrate and a print media.

58. (New) The system of Claim 56, further comprising a fluid source commonly coupled to all of the drop generators in a columnar group through the one or more fluid feed slots.

59. (New) The printhead of Claim 60, further including a fluid supply fluidically coupled to the fluid feed slot to supply the feed slot with fluid.

60. (New) The printhead of Claim 59, wherein the fluid supply is a supply of liquid ink.

61. (New) The system of Claim 56, wherein the subgroups include a pair of drop generators.

62. (New) The system of Claim 56, wherein the substrate includes a thin film layer having a plurality of fluid feed holes formed therein in communication with the one or more of the fluid feed slots to provide fluid to each of the subgroups of drop generators.

63. (New) The printhead of Claim 56, wherein the printhead electronics activates the drop generators in said columnar group of drop generators one at a time.

64. (New) The printhead of Claim 63, wherein the columnar group of drop generators is a primitive, and the substrate comprises a plurality of primitives arranged in a column.

65. (New) A method of controlling a printhead, comprising:
providing a printhead having a substrate surface with a columnar group of drop generators formed on the surface that are arranged into subgroups each comprising more than one drop generator;
fluidically isolated each subgroup from other subgroups on the surface;
feeding the subgroups with fluid through a slot formed through the substrate; and
providing electrical signals to the printhead to activate the drop generators to eject fluid drops such that no two drop generators in the same subgroup are activated in sequence.

66. (New) The method of Claim 65, further comprising:
providing fluid to the subgroups from a common fluid source through the slot.

67. (New) The method of Claim 66, further comprising replacing fluid to the fluid source.

68. (New) The method of Claim 67 wherein the fluid is liquid ink.

69. (New) The method of Claim 68, further comprising providing ink to each subgroup through an opening in a thin film layer.

70. (New) The method of Claim 67, further comprising providing ink to each subgroup through multiple openings in a thin film layer.

71. (New) The method of Claim 66, further comprising providing ink to each subgroup through multiple openings in the substrate surface.

72. (New) The method of Claim 65, wherein said providing electrical signals to the printhead further activates the drop generators such that no two drop generators in the same subgroup are activated simultaneously.

73. (New) An ink jet printhead comprising:
a substrate;
a thin film structure formed on the substrate and defining printhead circuitry;
a barrier/orifice structure supported by the substrate and defining an array of nozzles arranged in a plurality of nozzle columns and an array of firing chambers in correspondence with correspondence with the array of nozzles;
the nozzles comprising each column of the array arranged in subgroups of nozzles, each subgroup comprising at least two nozzles, each subgroup fed with liquid ink through a corresponding ink flow path isolated from other nozzles of the array by the barrier layer/orifice structure, wherein the ink flow path for each nozzle subgroup includes an opening or set of openings through the substrate, and wherein each nozzle of a nozzle subgroup is supplied with ink via said opening or set of openings.

74. (New) The printhead of Claim 73, further comprising printhead electronics that provide firing pulses to the drop generators such that no two nozzles of each nozzle subgroup are fired in sequence.

75. (New) The printhead of Claim 74, wherein the printhead electronics provides said firing pulses such that no two nozzles in a nozzle subgroup are activated simultaneously.

76. (New) The printhead of Claim 73 wherein the barrier/orifice structure includes a polymer layer.

77. (New) The printhead of Claim 73 wherein the nozzles of each nozzle column have a pitch of 600 nozzles per inch (npi).

78. (New) An ink jet printhead comprising:

a substrate having an ink feed slot formed therein;

a thin film layer disposed on a surface of the substrate, the thin film layer defining a plurality of firing resistors, the thin film layer having a plurality of ink feed openings formed through to provide respective ink paths through the ink feed slot and thin film layer;

a barrier/orifice structure disposed on the thin film layer, the structure defining an array of nozzles arranged in a plurality of nozzle columns and an array of firing chambers in correspondence with the array of nozzles, the nozzles comprising the array are arranged in subgroups of nozzles, each subgroup comprising at least two nozzles, each subgroup fed with liquid ink through a corresponding ink flow path isolated from other nozzles of the array by the barrier layer/orifice structure;

the firing resistors being arranged in correspondence with the firing chambers;

the barrier/orifice structure further comprising a continuous rib portion extending between adjacent first and second ones of the plurality of nozzle columns to fluidically separate the first and second ones of the nozzle columns.

79. (New) The printhead of Claim 78 wherein said plurality of ink feed openings are arranged in a first group on a first side of said rib portion for feeding nozzles of the first one of said plurality of columns, and a second group on a second side of said rib portion for feeding nozzles of the second one of said plurality of columns.

80. (New) The printhead of Claim 78, wherein the nozzles comprising the array are arranged in subgroups of nozzles, each subgroup comprising at least two nozzles, each subgroup fed with liquid ink through a corresponding ink flow path isolated from other nozzles of the array by the barrier layer/orifice structure.